Problem F
CPEquivalence
Time Limit: 2 Seconds

Given an integer array x consisting of integers (namely, each item of x is an integer), the Closest Position array (CP-array) $\mathrm{CP}(x)$ is an array of length $|x|$ defined to be

$$\mathrm{CP}(x)[i] = \max(\{j \mid j < i;\ x[j] \geq x[i]\} \cup \{-1\}) \text{ for all } 0 \leq i < |x|,$$

where $x[i]$ denotes the i-th integer in x, and the length $|x|$ is the number of integers in x. In other words, $\mathrm{CP}(x)[i]$ is the greatest index of x that is smaller than i and whose item at that index is greater than or equal to $x[i]$. For example, when $x = [64, 2, 5, 100, 100]$, its CP-array is $\mathrm{CP}(x) = [-1, 0, 0, -1, 3]$, and $|x| = 5$.

We say that two integer arrays x and y are CP-equivalent if $\mathrm{CP}(x) = \mathrm{CP}(y)$. It is obvious that two CP-equivalent integer arrays x and y have the same length. For example, two arrays $x = [64, 2, 5, 100, 100]$ and $y = [3, 1, 2, 4, 1]$ are CP-equivalent because their CP-arrays are the same as $[-1, 0, 0, -1, 3]$.

For an integer array x, an integer a and a non-negative integer $i < |x|$, a substitution operation on x at position i into a returns the array $[x[0], x[1], \cdots, x[i-1], a, x[i+1], \cdots, x[|x|-1]]$. For an integer array x and a non-negative integer $i < |x|$, a deletion operation on x at position i returns the array $[x[0], x[1], \cdots, x[i-1], x[i+1], \cdots, x[|x|-1]]$. Finally, for an integer array x, an integer a and a non-negative integer $i \leq |x|$, an insertion operation on x at position i returns the array $[x[0], x[1], \cdots, x[i-1], a, x[i], \cdots, x[|x|-1]]$. An edit operation on x is one of an insertion, a deletion or a substitution at a single position.

Given two integer arrays x and y, compute the minimum number of edit operations on y to obtain an array y' satisfying $\mathrm{CP}(x) = \mathrm{CP}(y')$.

For example, let $x = [64, 2, 5, 100, 100]$ and $y = [-5, -5, -5, -5]$. Consider the array $y' = [-5, -6, -5, -4, -5]$. Then, we have $\mathrm{CP}(y') = [-1, 0, 0, -1, 3]$ and therefore x and y' are CP-equivalent. Then, we can obtain the integer array y' applying two edit operations on y and it is minimum.

Input
Your program is to read from standard input. The input consists of three lines. The first line consists of two integers n and m ($1 \leq n \leq 40;\ 1 \leq m \leq 40$) that indicate the length of x and y, respectively. The second line consists of n integers between $-1{,}000{,}000$ and $1{,}000{,}000$ (both inclusive), representing the array x. The third line consists of m integers between $-1{,}000{,}000$ and $1{,}000{,}000$ (both inclusive), representing the array y.

Output
Your program is to write to standard output. Print exactly one line containing the minimum number of edit operations on y to obtain an integer array y' satisfying $\mathrm{CP}(x) = \mathrm{CP}(y')$.

The following shows sample input and output for four test cases.

Sample Input 1	Output for the Sample Input 1
5 5 64 2 5 100 100 3 1 2 4 1	0

Sample Input 2	Output for the Sample Input 2
5 4 64 2 5 100 100 -5 -5 -5 -5	2

Sample Input 3	Output for the Sample Input 3
6 5 1 2 3 4 5 6 2 5 3 4 5	3

Sample Input 4	Output for the Sample Input 4
6 3 1 3 5 2 5 2 5 5 6	3